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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/623,198

07/18/2003

Bruce Baretz

4241-198 CON

2836

23448

7590

10/20/2008

INTELLECTUAL PROPERTY / TECHNOLOGY LAW

PO BOX 14329

RESEARCH TRIANGLE PARK, NC 27709

EXAMINER

KALAM, ABUL

ART UNIT

PAPER NUMBER

2814

MAIL DATE

DELIVERY MODE

10/20/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/623,198	<b>Applicant(s)</b> BARETZ ET AL.	
	<b>Examiner</b> Abul Kalam	<b>Art Unit</b> 2814	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 31-38, 43-52 and 70-72 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 3, 31, 43-52 and 70-72 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>6/19/08</u> .   | 6) <input type="checkbox"/> Other: _____                          |



***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

2. Claims 31-33, 35-38, 44-47 and 50-52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (US 3,819,974; previously cited) in view of Silsby (US 5,563,621; previously cited by Applicant).

Regarding independent claim 31, Stevenson discloses a display including at least one light emission device (Fig. 3), wherein each light emission device comprises an LED ("light emitting diode," col. 3: ln. 25) energizable to emit radiation with an emission maximum in a spectral range of the blue to ultraviolet spectrum ("violet region," col. 3: lns. 24-28), and a luminophoric medium ("organic or inorganic phosphors," col. 3: lns. 30-31), arranged to be impinged by radiation emitted from the LED and to responsively emit radiation in a range of wavelengths ("lower frequencies," col. 3: ln. 29; "different colors," col. 4: lns. 1-7).

Thus, Stevenson discloses all the limitations of the claim, including wherein the light from the LED may be down converted to lower frequencies, using organic or

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inorganic phosphors, to produce all the primary colors (col. 3: Ins. 28-31, col. 4: Ins. 1-5). However, Stevenson does not explicitly disclose wherein the phosphors are combined in order to produce a white light output from the light emission device.

However, Silsby discloses an analogous display device (figs. 1-2) including phosphors impinged by a source of electromagnetic radiation, and responsively emitting radiation in a range of wavelengths, so that radiation is emitted from the light emission device as a white light output (col. 1, Ins. 34-56).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the teaching of Silsby into the device of Stevenson, to include white color elements in the display for the purpose of enabling a broader color range and a wider viewing angle (col. 1, Ins. 51-60). Furthermore, Silsby states: "By using four colour elements in a square pixel, the colour spread within the pixel may be improved (col. 2, Ins. 61-62)."

Regarding claim 32, Stevenson discloses wherein the luminophoric medium of each light emission device comprises phosphor material (col. 3: Ins. 28-31).

Regarding claim 33, Stevenson discloses wherein the luminophoric medium in each light emission device comprises a material responsively emitting radiation in at least the green spectrum (col. 4, Ins. 1-5: green is considered one of the "primary colors").

Regarding claim 35, the combination of Stevenson and Silsby teaches wherein the white light output of each light emission device comprises primary radiation

emission from the LED (Stevenson: col. 3: Ins. 26-31) and a secondary radiation emission from the luminophoric medium (Silsby: col. 1, Ins. 44-48).

Regarding claim 36, Stevenson discloses wherein the LED comprises GaN (col. 1: Ins. 59-67).

Regarding claim 37, Silsby also discloses the display comprising a liquid crystal display (Fig. 1).

Regarding claim 38, Silsby also discloses the display comprising a backlight display (Fig. 6).

Regarding independent claim 44, Stevenson discloses an apparatus comprising a display (col. 4: Ins. 5-7), electrical circuitry operatively coupled with the display (19 and 21, Fig. 3), and at least one light emitter including an LED operative coupled with the electrical circuitry (col. 2: Ins. 48-58) energizable to emit radiation with an emission maximum in a spectral range of the blue to ultraviolet spectrum ("violet region," col. 3: Ins. 24-28), and a luminophoric phosphor medium ("organic or inorganic phosphors," col. 3: Ins. 30-31), arranged to be impinged by radiation emitted from the LED and to responsively emit radiation in a range of wavelengths ("lower frequencies," col. 3: In. 29; "different colors," col. 4: Ins. 1-7).

Thus, Stevenson discloses all the limitations of the claim, including wherein the light from the LED may be down converted to lower frequencies, using organic or inorganic phosphors, to produce all the primary colors (col. 3: Ins. 28-31, col. 4: Ins. 1-

5). However, Stevenson does not explicitly disclose wherein the phosphors are combined in order to produce a white light output from the light emission device.

However, Silsby discloses an analogous display device (figs. 1-2) including phosphors impinged by a source of electromagnetic radiation, and responsively emitting radiation in a range of wavelengths, so that radiation is emitted from the light emission device as a white light output (col. 1, Ins. 34-56).

Therefore, it would have been obvious to one of ordinary skill in the art, at the time of the invention, to incorporate the teaching of Silsby into the device of Stevenson, to include white color elements in the display for the purpose of enabling a broader color range and a wider viewing angle (col. 1, Ins. 51-60). Furthermore, Silsby states: "By using four colour elements in a square pixel, the colour spread within the pixel may be improved (col. 2, Ins. 61-62)."

Regarding claim 45, Silsby also discloses wherein the display comprises a liquid crystal display (Fig. 1).

Regarding claim 46, Silsby also discloses wherein the light emitter provides illumination for the liquid crystal display (Fig. 6).

Regarding claim 47, Stevenson discloses wherein the luminophoric phosphor medium comprises a material responsively emitting radiation in at least the green spectrum (col. 4, Ins. 1-5: green is considered one of the "primary colors").

Regarding claim 50, the combination of Stevenson and Silsby teaches wherein the white light output of each light emission device comprises primary radiation

emission from the LED (Stevenson: col. 3: Ins. 26-31) and a secondary radiation emission from the luminophoric medium (Silsby: col. 1, Ins. 44-48).

Regarding claim 51, Stevenson discloses wherein the apparatus comprises a multiplicity of light emitters (col. 4: Ins. 5-7).

Regarding claim 52, Stevenson does not explicitly disclose the apparatus comprising a power supply coupled with the electrical circuitry.

However, such power supply is implicitly disclosed and is understood by the disclosure of the voltage that is applied across the device (col. 2: Ins. 51-54).

3. Claims 34 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (US '974) and Silsby (US '621), as applied to claims 31 and 44 above, respectively, and further in view of Kitagawa et al. (US 5,237,182; previously cited).

Regarding claims 34 and 49, Stevenson and Silsby teach all the limitations of the claims, as set forth above, but do not disclose wherein the LED comprises a blue light LED.

However, Kitagawa discloses display devices wherein the LED may comprise blue-light emitting diodes, violet-light emitting diodes or ultraviolet-light emitting diodes (col. 12: Ins. 11-21). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to incorporate the teaching of Kitagawa into the device of Stevenson, and thus, substitute Kitagawa's blue-light emitting diode for



Stevenson's violet-light emitting diode, because such a modification would have been considered a mere substitution of art recognized equivalent devices.

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency. *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Lindle Air Products Co.* 85 USPQ 328 (USSC 1950).

4. Claims 43 and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Stevenson et al. (US '974) and Silsby (US '621), as applied to claims 31 and 44 above, respectively, and further in view of Applicant's Admitted Prior Art (AAPA).

Regarding claims 43 and 48, Stevenson does not disclose wherein the luminophoric medium in each light emission device comprises a material responsively emitting radiation in at least the yellow spectrum.

However, AAPA discloses a luminophoric medium in each light emission device comprises a material responsively emitting radiation in at least the yellow spectrum, (specification pages 11-12). At the time the invention was made, it would have been obvious to a person having ordinary skill in the art to incorporate the luminophoric medium teaching of AAPA, in order to obtain the desired color for intended application.

5. Claims 70-72 are rejected under 35 U.S.C. 103(a) as being unpatentable over Seder (US 5,211,467; previously cited) in view of Stevenson et al. ('974).

With respect to claim 70, Seder teaches a liquid crystal display comprising a backlight structure (Figs. 1 and 2; col. 3, Ins. 43-46) including an lamp/phosphor assembly (12/42, Fig. 2) in which the lamp (12) is energizable to emit radiation and the phosphor (42) is arranged to be impinged by radiation from the lamp so that lamp/phosphor assembly produces back light illumination for the liquid crystal display. Thus, Seder discloses a lamp/phosphor assembly while the claim recites an LED/phosphor assembly. However, Stevenson discloses an LED/phosphor assembly (col. 3, Ins. 24-31), which is used in display systems (col. 4, Ins. 5-6). Therefore it would have been obvious to substitute the lamp of Seder with the LED taught by Stevenson, because such a modification would have been considered a mere substitution of art recognized equivalents (MPEP 2144.06).

Substitution of equivalents requires no express motivation as long as the prior art recognizes the equivalency (US 5,404,277: col. 1, Ins. 35-43). *In re Fount* 213 USPQ 532 (CCPA 1982); *In re Siebentritt* 152 USPQ 618 (CCPA 1967); *Graver Tank & Mfg. Co. Inc. v. Lindle Air Products Co.* 85 USPQ 328 (USSC 1950). (US 5,404,277: col. 1, Ins. 20-21, 35-44).

With respect to claim 71, Seder discloses an assembly arranged to produce back light illumination for the liquid crystal display (col. 3, Ins. 43-46) and Stevenson discloses an array of LED/phosphor assemblies (col. 4, Ins. 5-6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Seder and Stevenson, to produce an array of LED/phosphor

assemblies arranged to produce back light illumination for the liquid crystal display, for the same reasons as set forth above in claim 70.

With respect to claim 72, Seder discloses an assembly comprising a white light emitting lamp/phosphor assembly (col. 3, Ins. 9-11) and Stevenson discloses wherein the assembly is an LED/phosphor assembly (col. 3, Ins. 24-31). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of Seder and Stevenson, to produce an LED/phosphor assembly which comprises a white light emitting LED/phosphor assembly, for the same reasons as set forth above in claim 70.

### ***Response to Arguments***

6. Applicant's arguments with respect to claims 31-38 and 43-52 have been considered but are moot in view of the new ground(s) of rejection.

### ***Conclusion***

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Abul Kalam whose telephone number is (571)272-8346.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wael M. Fahmy can be reached on 571-272-1705. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

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Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/A. K./  
Examiner, Art Unit 2814

/Phat X. Cao/  
Primary Examiner, Art Unit 2814